

# METHOD FOR CONTROLLING PACKET RETRANSMISSION BY TIME STAMP

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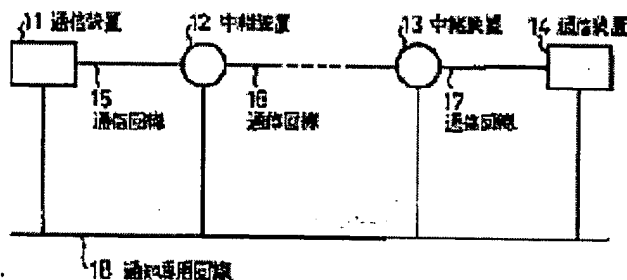
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## Abstract of JP7115437

**PURPOSE:** To prevent retransmission of unnecessary packets in the case that packet transmission is delayed not by the loss of packets but by the congestion of a communication line or the like.

**CONSTITUTION:** When transmitting a packet to a communication equipment 14, a communication equipment 11 adds the time stamp indicating the transmission time to this packet. Each of repeating installations 12 and 13 on the network from the communication equipment 11 as the transmission source to the communication equipment 14 as the transmission destination compares the time indicated by the time stamp in the received packet with the present time; and with respect to the packet which a preliminarily determined time or longer elapses after the transmission time of, a line 18 only for report is used to transmit the report signal, which indicates that this packet is processed at present, to the communication equipment 11 as the transmission source. When receiving the report signal from repeating installations 12 and 13, the communication equipment 11 initializes a timer for packet retransmission and holds packet retransmission.



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## CLAIMS

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[Claim(s)]

[Claim 1] In the packet resending control approach in the communication system constituted so that a transmitting agency communication device might resend the transmitting packet by which advice of arrival was not obtained from the transmission place communication device connected by the network In case a transmitting agency communication device transmits a packet to a transmission place communication device, it adds the time stamp in which submission time is shown to this packet, and is transmitted to it. The repeating installation on the network from a said transmitting former communication device to said transmission place communication device Compare the time of day and current time which the time stamp in the packet which received shows, and it is related with the packet which has passed beyond the time amount beforehand defined from submission time. It is the packet resending control approach by the time stamp which transmits the advice signal of the purport which the packet is current processing to a said transmitting former communication device, and is characterized by a said transmitting former communication device initializing the timer for packet resending by receiving said advice signal from said repeating installation.

[Claim 2] In the packet resending control approach in the communication system constituted so that a transmitting agency communication device might resend the transmitting packet by which advice of arrival was not obtained from the transmission place communication device connected by the network In case a transmitting agency communication device transmits a packet to a transmission place communication device, it adds the time stamp in which submission time is shown to this packet, and is transmitted to it. The repeating installation on the network from a said transmitting former communication device to said transmission place communication device Compare the time of day and current time which the time stamp in the packet which received shows, and it is related with the packet which has passed beyond the time amount beforehand defined from submission time. While the packet transmits the advice signal of the purport which is [ current ] under processing to a said transmitting former communication device The time of day which said time stamp shows is reset at current time, and a packet is relayed. A said transmitting former communication device The packet resending control approach by the time stamp characterized by resending a packet when the timer for packet resending is initialized and the timer for packet resending carries out a time-out by receiving said advice signal from said repeating installation.

[Claim 3] The packet resending control approach by the time stamp according to claim 1 or 2 characterized by using an advice dedicated line for transmission of the advice signal from said repeating installation to a said transmitting former communication device.

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[Translation done.]

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1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

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DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to the packet resending control approach of preventing resending of a superfluous packet especially using a time stump, about the packet resending control approach.

[0002]

[Description of the Prior Art] A transmission place communication device returns advice of attainment to a transmitting agency communication device, when a packet is received, and he is trying for a transmitting agency communication device to transmit the same packet again in the communication system which transmits and receives the information various between the communication devices on networks, such as LAN, in a packet format about the packet to which advice of attainment is not returned after transmission of a packet even if it carries out predetermined time progress.

[0003] Even when the packet does not arrive and has been lost in the transmission place communication device by performing resending control of such a packet, the same packet can be certainly sent into a transmission place communication device, and the integrity of packet transmission is guaranteed.

[0004]

[Problem(s) to be Solved by the Invention] however, a transmitting agency communication device to the cause that the advice of attainment from a transmission place communication device cannot be received after transmission of a packet even if it carries out predetermined time progress If a transmitting agency communication device transmits a packet when the communication line is crowded since there is delay of the packet transmission by congestion of a communication line in addition to loss of a packet, in spite of having not lost the packet Resending of a packet is performed and there is a trouble of lapsing into vicious circle that this resending packet applies a burden to a communication line further, and transmission of that packet causes delay and the further packet resending further as a result.

[0005] In addition, the technique to which it was made to change the resending interval which resends a packet based on a network traffic situation is proposed so that JP,4-47825,A may see, for example. Such a technique is an effective technique under some conditions, when a traffic situation changes gently, but when changing frequently [ a traffic situation ] and rapidly, effectiveness cannot be expected in the situation which cannot predict a future traffic situation to accuracy.

[0006] This invention is proposed in view of such a situation, and the object is in preventing certainly resending of the useless packet at the time of transmission of a packet being delayed by congestion of the communication line instead of loss of a packet etc. by notifying that to a transmitting agency communication device promptly, and inhibiting resending of a packet, when transmission of a packet will be delayed by congestion of a communication line etc.

[0007]

[Means for Solving the Problem] In the packet resending control approach in the communication system constituted so that a transmitting agency communication device might resend the transmitting packet by which advice of arrival was not obtained from the transmission place communication device connected

by the network, in order that this invention might attain the above-mentioned object a transmitting agency communication device In case a packet is transmitted to a transmission place communication device, add the time stamp in which submission time is shown to this packet, and it transmits to it. The repeating installation on the network from a said transmitting former communication device to said transmission place communication device Compare the time of day and current time which the time stamp in the packet which received shows, and it is related with the packet which has passed beyond the time amount beforehand defined from submission time. He is trying for a said transmitting former communication device to initialize the timer for packet resending by receiving said advice signal from said repeating installation by transmitting the advice signal of the purport which the packet is current processing to a said transmitting former communication device using an advice dedicated line.

[0008]

[Example] Next, the example of this invention is explained to a detail with reference to a drawing.

[0009] If drawing 1 is referred to, an example of the communication system which applied one example of this invention The communication device 11 which becomes the transmitting origin of a packet, and the communication device 14 which becomes the receiving origin of a packet, The repeating installation 12 and 13 which relays the packet transmitted to the communication device 14 from a communication device 11, The communication line 16 which connects the communication line 15 which connects a communication device 11 and repeating installation 12, and repeating installation 12 and repeating installation 13, It consists of a communication line 17 which connects repeating installation 13 and a communication device 14, and communication devices 11 and 14 and repeating installation 12 and the advice dedicated line 18 that connects both 13.

[0010] Drawing in which drawing 2 shows an example of a format of a transmitting packet, the flow chart which shows an example of processing of a communication device 11 in which drawing 3 becomes the delivery origin of a packet, the flow chart with which drawing 4 shows each repeating installation 12 and an example of processing of 13, and drawing 5 are flow charts which show an example of processing of the communication device 14 used as the destination of a packet. Hereafter, actuation of this example is explained with reference to each drawing.

[0011] A communication device 11 performs processing as shown in drawing 3 with the software which operates on a communication device 11, when transmitting various data to a communication device 14.

[0012] First, a communication device 11 sets transmit data as the transmission data 22 in the packet which consists of the header 21 as shown in drawing 2, transmission data 22, a time stamp 23, and a footer 24, when transmitting data to a communication device 14. And submission time is set as the part of a time stamp 23, the address of the communication device 14 used as the address of the communication device 11 which becomes a header 21 delivery origin, or the destination, a packet number, etc. are set up, and it transmits to a communication line 15 (step 3-1 of drawing 3).

[0013] Next, a communication device 11 initializes the timer for resending (step 3-2). The monitor of whether advice of arrival was answered via the advice dedicated line 18 from the communication device 14 of a transmission place (step 3-3), It supervises whether it has passed beyond fixed time amount T since the monitor (step 3-4) of whether advice was notified during processing via the advice dedicated line 18 from the repeating installation 12 and 13 on the way, and whether the timer for resending carried out the time-out and transmission (step 3-5).

[0014] And when advice of arrival comes via the advice dedicated line 18 from the communication device 14 of a transmission place within fixed time amount T until the timer for resending carries out a time-out (it is Yes at step 3-3), a packet ends the processing about the packet transmission as what arrived safely, and progresses to processing of the packet which should return to step 3-1 and should transmit to a degree.

[0015] initialize [ packet / it returns to step 3-2, and / the timer for resending ] Moreover, again, it begins [ when advice comes during processing from which repeating installation 12 and 13 via the advice dedicated line 18 within fixed time amount T until the timer for resending carries out a time-out (it is Yes at step 3-4) / noting that it does not lose but a packet is / current junction / under processing ] to supervise step 3-3 to 3-5.

[0016] On the other hand, when neither of advice comes during advice of arrival, and processing within fixed time amount T until the timer for resending carries out a time-out (it is Yes at step 3-5), a packet resends a packet as what was lost (step 3-6). In addition, the time stamp 23 in the packet resent at this time is the submission time by resending.

[0017] The packet transmitted to the communication line 15 from the communication device 11 is relayed by repeating installation 12, is sent to repeating installation 13 via a communication line 16, is further relayed by this repeating installation 13, and is sent to a communication device 14 via a communication line 17.

[0018] Each repeating installation 12 and 13 is performing processing as shown in drawing 4 with the software which operates on the equipment concerned.

[0019] First, each repeating installation 12 and 13 will inspect whether the submission time and current time which are set as the time stamp 23 shown in drawing 2 of the packet which received are compared, and the packet has passed beyond fixed time amount t since transmission, if a packet is received (step 4-1) (step 4-2). Here, fixed time amount t is set to time amount shorter than fixed time amount T until the timer for resending in the communication device 11 of a transmitting agency carries out a time-out, for example, the time amount of one half extent.

[0020] And if it has not passed beyond fixed time amount t since transmission of a packet (it is No at step 4-2), the packet which received is relayed as it is, without tampering with the value of a time stamp 23 (step 4-5).

[0021] On the other hand, if it has passed beyond fixed time amount t since transmission of a packet (it is Yes at step 4-2), the purport which specifies the packet number shaken at each packet, and an applicable packet is current processing will be notified to the communication device 11 which is the transmitting origin of the packet through the advice dedicated line 18 (step 4-3). And current time is reset to the time stamp in the packet which received (step 4-4), and the packet after this resetting is relayed (step 4-5).

[0022] The packet from the communication device 11 relayed by repeating installation 12 and 13 is received by the communication device 14 which is the final destination. If the communication device 14 is performing processing as shown in drawing 5 with the software which operates on equipment and a self-addressed packet is received (it is Yes at step 5-1), it will transmit the advice of arrival of the packet concerned to the communication device 11 of delivery origin through the advice dedicated line 18 (step 5-2).

[0023] Since advice goes up from each repeating installation 12 and 13 by the fixed time interval about the delay by congestion of a communication line among the delay of packet transmission by performing the above actuation, packet resending is not performed but unnecessary packet resending can be inhibited.

[0024]

[Effect of the Invention] According to the packet resending control approach by the time stamp of this invention, the following effectiveness can be acquired as explained above.

[0025] Add the time stamp in which submission time is shown to a packet, transmit to it, and each repeating installation is related with the packet which compares the time stamp and current time which the packet has in case a packet is processed, and has passed beyond fixed time amount since dispatch. Since the purport which that packet is current processing is transmitted to a transmitting agency communication device and it was made for a transmitting agency communication device to initialize the timer for packet resending by receiving this advice Resending of the useless packet at the time of transmission of a packet being delayed by congestion of the communication line instead of loss of a packet etc. can be prevented.

[0026] Since the transmission time delay of the transmitted packet itself is investigated, it can be coped with also when traffic changes rapidly.

[0027] Since the advice signal from each repeating installation was sent to the transmitting agency communication device using the advice dedicated line, the advice signal itself does not cause the overload of the communication line for packet transmission.

[0028] Since repeating installation will reset the time of day which a time stump shows at current time and will relay a packet if a packet transmits the advice signal of the purport which is under processing now to a transmitting agency communication device, however transmission of a packet may be delayed, it can suppress resending of the same packet from a transmitting agency communication device fundamentally.

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[Translation done.]